

WHAT IS CLAIMED IS:

SUBA

1. A pumping system comprising:
 - a pump barrel that is adapted to be placed into a well casing;
 - a plunger reciprocatably positioned within the pump barrel, wherein the plunger has an open top end, a bottom end, and a traveling valve at the bottom end;
 - a connector coupled to the plunger below the top end; and
 - a rod coupled to the connector, wherein the rod is translatable to reciprocate the plunger within the pump barrel using an upstroke and a downstroke, and wherein the top end of the plunger is adapted to direct particulate into the plunger and away from the pump barrel upon each upstroke.
2. A system as in claim 1, wherein the top end of cylinder is inwardly tapered, and wherein the connector is disposed within the cylinder.
3. A system as in claim 1, wherein the connector has at least one through hole to permit fluids to be moved upwardly through the connector and the plunger upon each downstroke of the plunger.
4. A system as in claim 1, wherein the pump barrel has a bottom end and a standing valve in the bottom end.
5. A method for pumping fluids from the ground, the method comprising:
 - placing a pumping system into the ground, wherein the pumping system comprises a pump barrel, a plunger reciprocatably positioned within the pump barrel, wherein the plunger has an open top end, a bottom end, and a traveling valve at the bottom end, and a connector coupled to the plunger below the top end; and
 - reciprocating the plunger within the pump barrel with an upstroke and a downstroke, and directing particulate into the plunger through the open top end and away from the pump barrel upon each upstroke.
6. A method as in claim 5, wherein the plunger comprises a cylinder having an inwardly tapered open top end to direct particulate into the cylinder upon each upstroke.

7. A method as in claim 5, wherein the plunger has a traveling valve at the bottom end, wherein the pump barrel has a standing valve at a bottom end such that fluids are drawn into the pump barrel through the standing valve upon each upstroke and are forced through the traveling valve upon each downstroke.

1 8. A method as in claim 5, wherein the connector has a through hole
2 such that fluids passing through the traveling valve move through the through hole and
3 upwardly through the plunger.

Figure 1 consists of 15 subplots arranged in a 5x3 grid, showing the evolution of the probability distribution of the number of nodes in each cluster over time. The subplots are labeled as follows:

- Row 1: $t=0$, $t=1$, $t=2$
- Row 2: $t=3$, $t=4$, $t=5$
- Row 3: $t=6$, $t=7$, $t=8$
- Row 4: $t=9$, $t=10$, $t=11$
- Row 5: $t=12$, $t=13$, $t=14$
- Row 6: $t=15$, $t=16$, $t=17$

The x-axis for all plots is 'Number of nodes in cluster' (0 to 100) and the y-axis is 'Probability' (0.00 to 0.10). The distributions start as a single peak at 1 node and evolve into a multi-modal distribution with peaks at 1, 2, and 3 nodes.